09/118,945 (Hurley et al)

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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.
09/118,945	07/17/98	HURLEY J	042390.P4661

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EXAMINER	
GOOD JOHNSON, M	
ART UNIT	PAPER NUMBER
2779	5

DATE MAILED: 05/11/00

Please find below and/or attached an Office communication concerning this application or proceeding.

Commissioner of Patents and Trademarks

☒ Responsive to communication(s) filed on _Jul 17, 1998_

☐ This action is **FINAL.**

☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under _Ex parte Quayle_, 1935 C.D. 11; 453 O.G. 213.

A shortened statutory period for response to this action is set to expire _____3___ month(s), or thirty days, whichever is longer, from the mailing date of this communication. Failure to respond within the period for response will cause the application to become abandoned. (35 U.S.C. § 133). Extensions of time may be obtained under the provisions of 37 CFR 1.136(a).

Disposition of Claim

☒ Claim(s) _1-17_____ is/are pending in the applicat

    Of the above, claim(s) _none_____ is/are withdrawn from consideration

☐ Claim(s) _____ is/are allowed.

☒ Claim(s) _1-17_____ is/are rejected.

☐ Claim(s) _____ is/are objected to.

☐ Claims _____ are subject to restriction or election requirement.

Application Papers

☐ See the attached Notice of Draftsperson's Patent Drawing Review, PTO-948.

☐ The drawing(s) filed on _____ is/are objected to by the Examiner.

☐ The proposed drawing correction, filed on _____ is ☐ approved ☐ disapproved.

☐ The specification is objected to by the Examiner.

☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. § 119

☐ Acknowledgement is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d).

    ☐ All ☐ Some* ☒ None of the CERTIFIED copies of the priority documents have been

      ☐ received.

      ☐ received in Application No. (Series Code/Serial Number) _____ .

      ☐ received in this national stage application from the International Bureau (PCT Rule 17.2(a)).

    *Certified copies not received: _____

☐ Acknowledgement is made of a claim for domestic priority under 35 U.S.C. § 119(e).

Attachment(s)

☒ Notice of References Cited, PTO-892

☒ Information Disclosure Statement(s), PTO-1449, Paper No(s). ____4___

☐ Interview Summary, PTO-413

☐ Notice of Draftsperson's Patent Drawing Review, PTO-948

☐ Notice of Informal Patent Application, PTO-152

— SEE OFFICE ACTION ON THE FOLLOWING PAGES —

Application/Control Number: 09/118,945 (Hurley et al.) Page 2

Art Unit: 2779

DETAILED ACTION

1.   This action is responsive to communications: application, filed on 07/17/1998; IDS paper #3, filed on 07/17/1998.

2.   Claims 1-17 are pending in the case. Claims 1, 7, 12 and 15 are independent claims. No claims have yet been amended.

3.   The present title of the application is "Extension of Fast Phong Shading Technique for Bump Mapping" (as originally filed).

Claim Rejections - 35 USC § 103

4.   The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness

rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

5.   Claims 1-17 are rejected under 35 U.S.C. 103(a) as being unpatentable over Cabral et al.,

U.S. Patent Number 5,949,424, "Method, System, and Computer Program Product for Bump

Mapping in Tangent Space", class 345/426, 09/07/1999, filed on 02/28/1997, in view of 3D

Studio MAX, Appendix A, section 2-2, pps. 2-1 to 2-30.

As per independent claim 1, "... **a method for implementing bump mapping,**

comprising the steps of: generating a table of color values ... ; Cabral et al. discloses in col.

3, line 24; **estimating angle coordinates for a pixel in a polygon;** Cabral et al. discloses in col.

4, lines 3-6; **modifying the estimated angle coordinates** ... ; Cabral et al. discloses in col. 4,

lines 6-10; **converting the modified angle coordinates** ... ; Cabral et al. discloses in col. 4,

lines 10-17; **and assigning the pixel a color value according to the one or more color**

variables." Cabral et al. discloses in col. 7, lines 1-3.

However it is noted that Cabral et al. fails to disclose said table values and assigning the

pixel a color value according to one or more color variables. 3D Studio MAX discloses on pp. 2-

Application/Control Number: 09/118,945 (Hurley et al.)   Page 4

Art Unit: 2779

29, UV coordinates which display the range of UV mapping coordinates as a color gradient. It would have been obvious to one of ordinary skill in the art at the time of the invention that said UV map implement said bump mapping and that said colors are generated from said table or color channels disclosed on pp. 2-16 3D Studio MAX palette for special effects during rendering and compositing as disclosed in 3D Studio MAX on pp. 2-29.

With respect to dependent claim 2, "... **generating angle perturbations; and adding the angle perturbations to the angle coordinates.**" Cabral et al. discloses in col. 4, lines 19-22.

With respect to dependent claim 3, "... **estimating a bump variable for the pixel; and converting the bump variable to angle perturbations.**" Cabral et al. discloses in col. 4, lines 30-35.

With respect to dependent claim 4, "... **converting the perturbation variable comprises retrieving angle perturbations from a bump map location ...**" Cabral et al. discloses in col. 6, lines 35-45.

With respect to dependent claim 5, "... **determining angle coordinates for normal vector orientations at vertices ... ; interpolating angle coordinates for the pixel from the determined angle coordinates.**" Cabral et al. discloses in col. 4, lines 2-9.

With respect to dependent claim 6, "... **determining perturbation variables for the vertices of the polygon; interpolating perturbation variables for the pixel from the determined vertex perturbation variables.**" Cabral et al. discloses in col. 4, lines 2-10.

Application/Control Number: 09/118,945 (Hurley et al.)   Page 5

Art Unit: 2779

As per independent claim 7, "... a graphics system comprising: a geometry engine ...
; a color map including color values for a sample of vector orientations ...; Cabral et al.
discloses in col. 4, lines 46-50; a perturbation source to provide orientation perturbations;
Cabral et al. discloses in col. 4, lines 19-22; and a rendering engine to convert vertex data for
each polygon to angle and perturbation coordinates ..." Cabral et al. discloses in col. 3, lines
13-15.

However, it is noted that Cabral et al. fails to disclose said table values and assigning the
pixel a color. Cabral et al. discloses in col. 6, lines 66-67 and col. 7, lines 1-3 that said models
and equivalents are used to describe factors for determining a surface's color. 3D Studio MAX
discloses on pp. 2-29, UV coordinates which display the range of UV mapping coordinates as a
color gradient. It would have been obvious to one of ordinary skill in the art at the time of the
invention that said UV map implement said bump mapping and that said colors are generated from
said table or color channels disclosed on pp. 2-16 3D Studio MAX palette.

With respect to dependent claim 8, "... the orientation-dependent color variables are
linearly related to angle coordinates ..." 3D Studio MAX discloses on pp. 2-29, that said "...
channel shows where mapping seams might occur".

With respect to dependent claim 9, "... the perturbation source is a bump map
including angle perturbations ..." Cabral et al. discloses in col. 6, lines 35-45.

Application/Control Number: 09/118,945 (Hurley et al.)   Page 6

Art Unit: 2779

With respect to dependent claim 10, "... **rendering engine includes a generator that combines the angle coordinates and angle perturbations into perturbed color coordinates.**" Cabral et al. discloses in col. , lines .

With respect to dependent claim 11, "... **the perturbation source is an algorithm for associating perturbations with polygon locations ...**" Cabral et al. discloses in col. 3, lines 15-19.

As per independent claim 12, "... **a machine readable medium ... the method comprising: generating color values for a sample of normal vector orientations ...** ; Cabral et al. discloses in col. 3, lines 13-15. **estimating one or more angle coordinates for the pixel;** Cabral et al. discloses in col. 6, lines 36-40. **perturbing the one or more angle coordinates to provide modified angle coordinates;** Cabral et al. discloses in col. 6, lines 40-43. **and retrieving a color value for the pixel according to the perturbed angle variables.**" Cabral et al. discloses in col. 6, lines 43-46.

However, it is noted that Cabral et al. fails to disclose said color value for each pixel. Cabral et al. discloses in col. 6, lines 66-67 and col. 7, lines 1-3 that said models and equivalents are used to describe factors for determining a surface's color. 3D Studio MAX discloses on pp. 2-29, UV coordinates which display the range of UV mapping coordinates as a color gradient. It would have been obvious to one of ordinary skill in the art at the time of the invention that said UV map implement said bump mapping and that said colors are generated from said table or color

Application/Control Number: 09/118,945 (Hurley et al.)   Page 7

Art Unit: 2779

channels disclosed on pp. 2-16 3D Studio MAX palette for special effects during rendering and compositing as disclosed in 3D Studio MAX ON pp. 2-29.

With respect to dependent claim 13, "**. . . generating angle perturbation for the pixel ; and combining the angle perturbations with the angle coordinates to form modified angle coordinates.**" Cabral et al. discloses in col. 6, lines 47-52.

With respect to dependent claim 14, "**. . . interpolating angle coordinates for the pixel from angle coordinates for the polygon vertices; and converting the interpolated angle coordinates to scaled angle coordinates.**" Cabral et al. discloses in col. 6, lines 52-59.

As per independent claim 15, it is rejected based upon similar rational as above independent claim 7.

With respect to dependent claims 16 and 17 respectively, see above rejection for dependent claims 9 and 10.

Application/Control Number: 09/118,945 (Hurley et al.)   Page 8

Art Unit: 2779

6.   Any response to this action should be mailed to:

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or faxed to:

        (703)-308-9051 (**formal** communications intended for entry),

Or:

        (703)-305-9724 (**informal** communications labeled **PROPOSED** or **DRAFT**).

Hand-delivered responses should be brought to:

        Sixth Floor Receptionist, Crystal Park II, 2121 Crystal Drive, Arlington, VA.

7.   Any inquiry concerning this communication or earlier communications from the examiner

should be directed to Motilewa Good-Johnson, whose telephone number is (703)-305-3939 and

can normally be reached Monday, Tuesday, Thursday and Friday from 7:30 AM to 6 PM.

        If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor,

Mark Powell, can be reached at (703)-305-9703.

        Any inquiry of a general nature or relating to the status of this application or proceeding

should be directed to the group receptionist whose telephone number is (703)-305-3900.

Motilewa Good-Johnson
Patent Examiner
Art Unit 2779

                                MARK R. POWELL
                                SUPERVISORY PATENT EXAMINER
                                GROUP 2700